

Multi-axis Attitude Control and Energy Storage on Small Satellites

Completed Technology Project (2012 - 2014)



Project Introduction

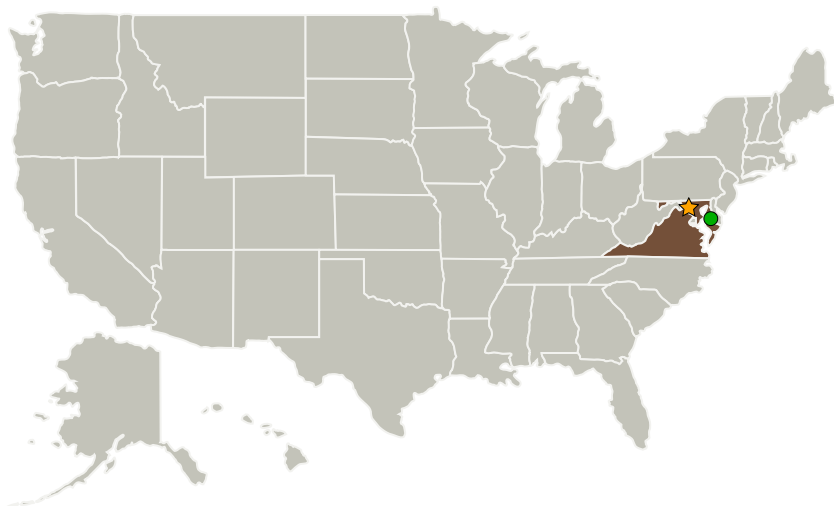
To fully-enable cutting edge science through small satellites (smallsat), this technology will reduce the overall size and net power consumption of conventional three-axis attitude control systems.

A CubeSat is a volume-limited, standardized smallsat form factor (typ. 1-6U, where 1U = 10 cm³) that occasionally needs to be equipped with an active attitude control system, e.g. reaction wheels needed for high-resolution science imaging, orbit maintenance, and maximum irradiance on solar cells. The proposed architecture provides improved performance over traditional wheels and satisfies the push for component miniaturization, increased pointing accuracy, and power efficiency on CubeSats.

Anticipated Benefits

N/A

Primary U.S. Work Locations and Key Partners



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Organizations Performing Work	Role	Type	Location
★Goddard Space Flight Center(GSFC)	Lead Organization	NASA Center	Greenbelt, Maryland
Northrop Grumman Systems Corporation	Supporting Organization	Industry	Falls Church, Virginia
●Wallops Flight Facility(WFF)	Supporting Organization	NASA Facility	Wallops Island, Virginia

Primary U.S. Work Locations

Maryland	Virginia
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Images



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 (<https://techport.nasa.gov/image/3968>)

Organizational Responsibility

Responsible Mission Directorate:

Mission Support Directorate (MSD)

Lead Center / Facility:

Goddard Space Flight Center (GSFC)

Responsible Program:

Center Independent Research & Development: GSFC IRAD

Project Management

Program Manager:

Peter M Hughes

Project Manager:

John C Adams

Principal Investigator:

Alvin G Yew

Co-Investigator:

Emory R Stagmer

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Links

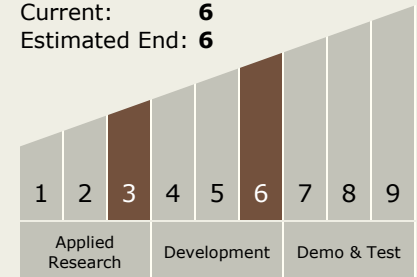
NTR 1
(<http://N/A>)

Project Website:

<http://aetd.gsfc.nasa.gov/>

Technology Maturity (TRL)

Start: **3**
Current: **6**
Estimated End: **6**



Technology Areas

Primary:

- TX17 Guidance, Navigation, and Control (GN&C)
 - └ TX17.3 Control Technologies
 - └ TX17.3.4 Control Force/Torque Actuators